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10/674,617

09/30/2003

Charles R. Szmanda

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12/23/2004

EDWARDS & ANGELL, LLP

P.O. BOX 55874

BOSTON, MA 02205

EXAMINER

ZACHARIA, RAMSEY E

ART UNIT

PAPER NUMBER

1773

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/674,617

Applicant(s)

SZMANDA ET AL.

Examiner

Ramsey Zacharia

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

## A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claims 1-12 are rendered indefinite because no units are recited for the claimed  $\delta_v$  value.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Müller et al. (U.S. Patent 4,335,266).

Müller et al. teach a solvent composition that is a 1:1 volume mixture of tetrahydrofuran and chloroform (Example 4: column 16, lines 66-68). According to Figure 1 of the instant

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application, the  $\delta_d$  and  $\delta_p$  values for tetrahydrofuran and chloroform are 8.2 & 2.8 and 8.7 & 1.5, respectively. Therefore, for a 1:1 volume mixture of tetrahydrofuran and chloroform,  $\delta_d$  is  $(8.2+8.7)/2 = 8.45$  and  $\delta_p$  is  $(2.8+1.5)/2 = 2.15$ . The  $\delta_v$  value of the solvent mixture is about  $(71.40+4.62)^{1/2} = 8.72$ .

The limitation that the solvent composition is "for forming a ferroelectric polymer film" is an intended use of the solvent composition. It has been held that a recitation with respect to the manner in which a claimed product is intended to be employed does not differentiate the claimed product from a prior art product satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

6. Claims 1, 2, 4, 5, 7-13, and 15-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishi et al. (U.S. Patent 5,541,747).

Nishi et al. teach a displacer device comprising an organic ferroelectric film (Example 2). The ferroelectric film comprises a copolymer of trifluoroethylene and vinylidene fluoride cast from a solution with dimethyl formamide as the solvent (column 18, lines 38-44). Dimethyl formamide has a  $\delta_v$  value of 10.82 (see Figure 1 of the instant application) and a boiling point of 153 °C. Since the boiling point of dimethyl formamide is higher than that of n-butyl acetate (153 versus 125 °C), the relative evaporation rate of dimethyl formamide should be less than that of n-butyl acetate. The ferroelectric film is disposed between two electrodes, a pixel electrode 161 and lead electrode 163 (Figure 8 and column 18, lines 32-63).

Regarding the atomic force microscopy roughness, crystalline domain size, coercivity field strength, polling fatigue, and differential permittivity, these properties appear to be a

function of the solvent used in forming the film (see page 8, line 29-page 9, line 18 and Figure

2). Since Nishi et al. uses the same polymer material (copolymer of trifluoroethylene and vinylidene fluoride) and forms the film from a solvent having a  $\delta_v$  value of greater than 8.5 (cal/cc)<sup>1/2</sup>, the ferroelectric film of Nishi et al. should inherently have an atomic force microscopy roughness, crystalline domain size, coercivity field strength, polling fatigue, and differential permittivity that meets the limitations of the instant claims.

7. Claims 1-5, 7-13, and 15-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohigashi et al. (U.S. Patent 5,679,753).

Ohigashi et al. teach a film of a copolymer of 75 mol% vinylidene fluoride and 25 mol% ethylene trifluoride cast from solution with dimethyl formamide as the solvent (Example 1, column 5, lines 35-47). Dimethyl formamide has a  $\delta_v$  value of 10.82 (see Figure 1 of the instant application) and a boiling point of 153 °C. Since the boiling point of dimethyl formamide is higher than that of n-butyl acetate (153 versus 125 °C), the relative evaporation rate of dimethyl formamide should be less than that of n-butyl acetate.

Regarding the atomic force microscopy roughness, crystalline domain size, coercivity field strength, polling fatigue, and differential permittivity, these properties appear to be a function of the solvent used in forming the film (see page 8, line 29-page 9, line 18 and Figure 2). Since Ohigashi et al. uses the same polymer material (copolymer of trifluoroethylene and vinylidene fluoride) and forms the film from a solvent having a  $\delta_v$  value of greater than 8.5 (cal/cc)<sup>1/2</sup>, the ferroelectric film of Ohigashi et al. should inherently have an atomic force

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microscopy roughness, crystalline domain size, coercivity field strength, polling fatigue, and differential permittivity that meets the limitations of the instant claims.

8. Claims 1-13 and 15-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhang et al. (U.S. Patent 6,423,412).

Zhang et al. teach an electrical device comprising a layer of a ferroelectric polymer subjected to electron beam radiation (column 2, lines 42-54). The polymer may be a copolymer of 50-86 mol% vinylidene fluoride and 14-50 mol% trifluoroethylene (column 5, lines 33-45). The film may be made by casting a solution of the polymer in dimethyl formamide as the solvent (column 5, lines 46-53). Dimethyl formamide has a  $\delta_v$  value of 10.82 (see Figure 1 of the instant application) and a boiling point of 153 °C. Since the boiling point of dimethyl formamide is higher than that of n-butyl acetate (153 versus 125 °C), the relative evaporation rate of dimethyl formamide should be less than that of n-butyl acetate. The film may be disposed between two electrodes to form a multilayer capacitor, which reads on a data processing device (Figure 16).

Regarding the atomic force microscopy roughness, crystalline domain size, coercivity field strength, polling fatigue, and differential permittivity, these properties appear to be a function of the solvent used in forming the film (see page 8, line 29-page 9, line 18 and Figure 2). Since Zhang et al. uses the same polymer material (copolymer of trifluoroethylene and vinylidene fluoride) and forms the film from a solvent having a  $\delta_v$  value of greater than 8.5 (cal/cc)<sup>1/2</sup>, the ferroelectric film of Zhang et al. should inherently have an atomic force microscopy roughness, crystalline domain size, coercivity field strength, polling fatigue, and differential permittivity that meets the limitations of the instant claims.

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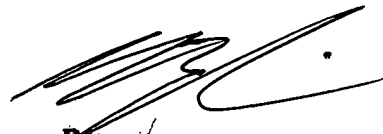
***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramsey Zacharia whose telephone number is (571) 272-1518.

The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones, can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
**Ramsey Zacharia**  
**Primary Examiner**  
**Tech Center 1700**